01-26-06

AF SPW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Sosa, et al.	§	
	§	
Serial No.: 10/674,224	§	Group Art Unit: 1711
	§	
Confirmation No.: 2510	§	
	§	
Filed: September 29, 2003	§	Examiner: Asinovsky
	§	
For: High Impact Polystyrene and Process for Preparing Same	§	
	§	
	§	
	§	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

CERTIFICATE OF MAILING
37 CFR 1.10
I hereby certify that this correspondence is being deposited on the date below with the United States Postal Service as Express Mail, Mailing Label No. EQ 190570329 US, in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

1/24/2006 _____
Date Signature

TRANSMITTAL LETTER

In connection with the above identified application, Applicants respectfully resubmit the following in response to the Notice of Non-Compliant Appeal Brief dated January 10, 2006:

1. Appeal Brief.

Please note that the Notice stated that the Appeal Brief is missing arguments over reference Kamath. Applicants are not appealing the rejection of claims over Kamath and therefore such arguments are not included in the Brief. Please refer to the Grounds of rejection to be reviewed on Appeal to clarify which claims and rejections thereof are being appealed. Thank you.

Respectfully submitted,

Tenley R. Krueger
Registration No. 51,253

T.R. Krueger, P.C.
15503 F.M. 529 Rd., #521
Houston, Texas, 77095-5400
Telephone: 832-465-0157
Fascimile: 281-463-8012
Attorney for Appellant(s)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Sosa, et al.	§	
Serial No.: 10/674,224	§	Group Art Unit: 1711
Confirmation No.: 2510	§	
Filed: September 29, 2003	§	Examiner: Asinovsky
For: High Impact Polystyrene and Process for Preparing Same	§	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Honorable Commissioner:

CERTIFICATE OF MAILING
37 CFR 1.10
I hereby certify that this correspondence is being deposited on the date below with the United States Postal Service as Express Mail, Mailing Label No. EQ 190570329 US, in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

1/24/2006 _____
Date Signature

APPEAL BRIEF

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decisions of the Examiner of Group Art Unit 1711 dated March 31, 2005, finally rejecting claims 25-26 and dated July 8, 2005, finally rejecting claims 10-11. Please note that Appellants are not appealing the rejection of claims 1-9 and 11-24 and therefore an argument related to U.S Patent No. 4,125,695 (*Kamath)* is not necessary).

Real Party in Interest

The present application has been assigned to Fina Technology Inc., P.O. Box 674412, Houston, Texas 77267.

Related Appeals and Interferences

Appellants assert that no other appeals, interferences or judicial proceedings are known to the Appellants, the Appellants' legal representative or Assignee that will directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1-24 are pending in the application and were originally presented in the application. Claims 25-26 are pending in the application and were submitted in a Response dated January 24, 2005. Claims 1, 3-5, 8-9, 13-20 and 24-26 stand rejected under 35 U.S.C. §102(b). Claims 2, 6-7, 12 and 21-23 stand rejected under 35 U.S.C. §103(a). Claims 10 and 11 stand objected to/rejected. The Examiner indicated that the subject matter of claim 10 "would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." *See*, Final Office Action at page 6. The pending claims are shown in the attached Appendix A.

Applicants submitted claim 10 in independent form including all of the limitations of the base claim (*i.e.*, claim 1) in response thereto. *See*, Response dated June 16, 2005, claim 27. However, the Examiner issued an Advisory Action refusing to enter new claim 27 stating that "[a]lthough the amendment is supported in the previously claimed 10, it was not a part of the claims subjected to earlier prosecution." *See*, Advisory Action at page 2, first paragraph.

Status of Amendments

Claim 27 was resubmitted in an Amendment dated October 13, 2005 (*i.e.*, after the filing of a Notice of Appeal, but prior to the filing of this Appeal Brief.) Claim 27 is essentially "rewriting an independent claim to incorporate therein all the subject matter of a dependent claim and canceling the dependent claim," which may be entered after the filing of a Notice of Appeal. *See*, 37 C.F.R. §41.33. The submitted claim amendments are shown in the attached Appendix B.

Summary of Claimed Subject Matter

High Impact Polystyrene (HIPS) processes generally include balancing properties, such as bulk viscosity, chemical grafting, rubber and polystyrene molecular weights and shear rates in order to prepare HIPS having a desired particle size and morphology. For example, it is generally considered desirable to formulate toward a narrow particle size distribution and large, regular inclusions in order to obtain the highest rubber phase volume. *See*, specification, at least page 8, paragraph 30 at lines 1 to 5. Unfortunately, as the level of grafting decreases, polystyrene inclusions can decrease in size, therefore increasing the overall number of particles per unit volume. *See*, specification, at least page 8, paragraph 31 at lines 3 to 5.

Embodiments of the present invention provide a process of preparing HIPS, wherein a rubber and styrene monomer are admixed in the presence of at least two polymerization initiators, such initiators being selected to optimize a high impact polystyrene morphology. *See*, specification, at least page 6, paragraph 23 at lines 10 to 13, page 5, paragraph 21 at lines 1 to 3, page 5, paragraph 20 at lines 1 to 4 and page 8, paragraph 29, lines 1 to 9. In one specific embodiment, the morphology includes honeycomb structures. *See*, specification, at least page 8, paragraph 29 at lines 2 to 7. The polymerization initiators include a grafting initiator and a non-grafting initiator. *See*, specification, at least page 6, paragraph 23 at lines 1 to 10 and page 6, paragraph 22 at lines 1 to 3. Such a process unexpectedly may increase the rubber particle size while maintaining the desired polymer morphology. *See*, specification, examples (*e.g.*, page 10, paragraph 37 at lines 7 to 11, Figure 3, numbers 301 and 302 and Figures 4-7 and Figures 8-9 for comparison.)

Grounds of Rejection to be Reviewed on Appeal

1. Whether the Examiner erred in rejecting claims 25-26 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,861,827 (*Sosa '827*) on grounds that the broad disclosure of *Sosa '827* does not anticipate the pending claims.

2. Whether the Examiner erred in rejecting claims 10-11 on grounds that the references of record do not teach, show or suggest the features of the pending claims.

Arguments

I. THE EXAMINER ERRED IN REJECTING CLAIMS 25-26 UNDER 35 U.S.C. §102(b) AS BEING ANTICIPATED BY *SOSA '827* BECAUSE THE BROAD DISCLOSURE IN *SOSA '827* DOES NOT TEACH ADMIXING A RUBBER AND STYRENE MONOMER IN THE PRESENCE OF A GRAFTING INITIATOR AND A NON-GRAFTING INITIATOR, THE INITIATORS SELECTED TO OPTIMIZE A HIPS MORPHOLOGY.

The Final Rejection stated that because "any addition components in a process for producing a HIPS composition is/are expected as conventional ingredients", "any morphology structure of the resultant HIPS polymer could be obtained" in *Sosa '827*. *See*, Final Rejection at page 4. It is well established that to anticipate a claim, a single source must contain all of the elements of the claim. *See, Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986.) Further, to support an anticipation rejection based on inherency, an Examiner must provide factual and technical grounds establishing that the inherent feature necessarily flows from the teachings of the prior art. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *See, Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990.)

Applicants disagree that *Sosa* anticipates the pending claims. *Sosa* teaches that "peroxy free-radical initiators are a useful class of initiators for such processes, but that acidic decomposition by-products of such peroxy free-radical initiators produce the undesirable effects which the present invention is intended to alleviate. Applicants' recognition of such acidic by-products as the source of a problem in the manufacture of HIPS products is a significant threshold aspect of the present invention." *See*, at least column 4, lines 25-35. While *Sosa* states that "alternatively, a combination of two or more free radical initiators could be used, such that one free radical initiator decomposes in the polymerization reactor and another free radical initiator decomposes in the linear-flow reactor," *Sosa* nowhere teaches or suggests combining a grafting initiator and a non-grafting initiator, such initiators selected to optimize a high impact polystyrene morphology, as recited in pending claim 25. *See*, at least column 3, lines 55-61. Rather, *Sosa* teaches selecting initiators that do not produce acidic by-products.

Therefore, reversal of the rejection is respectfully requested.

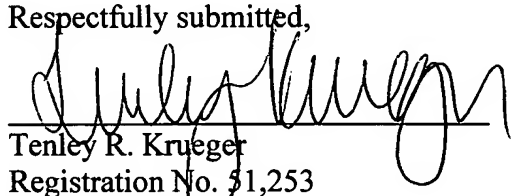
II. THE EXAMINER ERRED IN REJECTING CLAIMS 10-11 BECAUSE THE FEATURES OF THE PENDING CLAIMS ARE NOT TAUGHT OR SUGGESTED IN THE REFERENCES OF RECORD.

The Examiner set forth the same arguments for rejecting claims 10-11 as set forth in refusing to enter new claim 27. *See*, above, at least **Claim Amendments**. Applicants set forth reasoning why new claim 27 (*i.e.*, subject matter of pending claim 10) is admissible and the Examiner has acknowledged that the subject matter of new claim 27 is allowable over the prior art of record. *See*, Final Rejection, page 6. Based on such previously presented arguments, Applicants respectfully request reversal of the rejection.

Conclusion

In conclusion, the references of record do not teach or suggest the subject matter of at least pending claims 10-11 and 25-26. Thus, Applicants respectfully request reversal of the rejections of claim 10-11 and 24-26.

Respectfully submitted,



Tenley R. Krueger
Registration No. 51,253
T.R. Krueger, P.C.
15503 F.M. 529 Rd., #521
Houston, Texas, 77095-5400
Telephone: 832-465-0157
Fascimile: 281-463-8012
Attorney for Appellant(s)

Appendix A

Pending Claims

1. A process for preparing a high impact polystyrene comprising admixing a rubber and styrene monomer in the presence of at least two polymerization initiators and polymerizing the styrene wherein at least one of the at least two polymerization initiators is a grafting initiator and at least one of the at least two polymerization initiators is a non-grafting initiator.

2. The process of Claim 1 additionally comprising polymerizing the styrene monomer in the presence of a chain transfer agent.

3. The process of Claim 1 wherein rubber is selected from the group consisting of polybutadiene, styrene-butadiene rubber, styrene-butadiene-styrene rubber, natural rubber, and mixtures thereof.

4. The process of Claim 3 wherein the rubber is polybutadiene.

5. The process of Claim 1 additionally comprising including a solvent in the admixture.

6. The process of Claim 5 wherein the solvent is selected from the group consisting of ethylbenzene, toluene, xylenes, cyclohexane, and mixtures thereof.

7. The process of Claim 5 wherein the solvent is an aliphatic hydrocarbon solvent.

8. The process of Claim 1 wherein the grafting initiator is selected from the group consisting of 1,1-di-(t-butylperoxy)cyclohexane; 1,1-di-(t-amylperoxy)cyclohexane); 1,1-di-(t-butylperoxy)-3,3,5-trimethyl-cyclohexane; OO-t-amyl-O-(2-ethylbexyl monoperoxy-carbonate); OO-t-butyl O-isopropyl monoperoxy-carbonate; OO-t-butyl-O-(2-ethylhexyl)monoperoxy-carbonate; butyl-4,4-di(t-butylperoxy)valerate; Ethyl 3,3-Di-(t-butylperoxy)butyrate; and mixtures thereof.

9. The process of Claim 8 wherein the grafting initiator is 1,1-di-(t-butylperoxy)cyclohexane.

10. The process of Claim 1 wherein the non-grafting initiator is selected from the group consisting of 2,2'-azobis(isobutyronitrile), 2,2'-azobis(2-methylbutyronitrile), lauroyl peroxide, decanoyl peroxide, and mixtures thereof.

11. The process of Claim 10 wherein the non-grafting initiator is 2,2'-azobis(isobutyronitrile).

12. The process of Claim 1 wherein the high impact polystyrene is prepared using an upflow reactor.

13. The process of Claim 12 wherein the process is a continuous process.

14. The process of Claim 1 wherein the temperatures range for the polymerization is from about 100°C to about 230°C.

15. The process of Claim 14 wherein the temperatures range for the polymerization is from about 110°C to about 180°C.

16. The process of Claim 1 wherein the grafting initiator is present in an amount of from about 50 to about 1000 parts per million and the non-grafting initiator is present in an amount of from about 100 to about 600 parts per million.

17. The process of Claim 16 wherein the grafting initiator is present in an amount of from about 100 to about 600 parts per million and the non-grafting initiator is present in an amount of from about 100 to about 500 parts per million.

18. The process of Claim 1 wherein the grafting and non-grafting initiators are present in a ratio of grafting to non-grafting initiator of from about 1:10 to about 10:1.

19. The process of Claim 18 wherein the ratio of grafting to non-grafting initiator is from about 1:3 to about 3:1.

20. The process of Claim 19 wherein the weight ratio of styrene to rubber is from about 99:1 to about 7:1.

21. The process of Claim 1 wherein the admixture includes an additive.

22. The process of Claim 21 wherein the additive is selected from the group consisting of chain transfer agents, talc, anti-oxidants, UV stabilizers, lubricants, mineral oil, plasticizers

23. The process of Claim 1 additionally comprising removing residual monomer or solvent from the product high impact polystyrene.

24. A high impact polystyrene prepared by the process of Claim 1.

25. A process for preparing a high impact polystyrene comprising:

admixing a rubber and styrene monomer in the presence of at least two polymerization initiators selected to optimize a high impact polystyrene morphology, wherein at least one of the at least two polymerization initiators is a grafting initiator and at least one of the at least two polymerization initiators is a non-grafting initiator; and

polymerizing the styrene to form the high impact polystyrene.

26. The process of claim 25, wherein the high impact polystyrene morphology comprises honeycomb structures.

Appendix B
Proposed Claims

1. (Original) A process for preparing a high impact polystyrene comprising admixing a rubber and styrene monomer in the presence of at least two polymerization initiators and polymerizing the styrene wherein at least one of the at least two polymerization initiators is a grafting initiator and at least one of the at least two polymerization initiators is a non-grafting initiator.

2. (Original) The process of Claim 1 additionally comprising polymerizing the styrene monomer in the presence of a chain transfer agent.

3. (Original) The process of Claim 1 wherein rubber is selected from the group consisting of polybutadiene, styrene-butadiene rubber, styrene-butadiene-styrene rubber, natural rubber, and mixtures thereof.

4. (Original) The process of Claim 3 wherein the rubber is polybutadiene.

5. (Original) The process of Claim 1 additionally comprising including a solvent in the admixture.

6. (Original) The process of Claim 5 wherein the solvent is selected from the group consisting of ethylbenzene, toluene, xylenes, cyclohexane, and mixtures thereof.

7. (Original) The process of Claim 5 wherein the solvent is an aliphatic hydrocarbon solvent.

8. (Original) The process of Claim 1 wherein the grafting initiator is selected from the group consisting of 1,1-di-(t-butylperoxy)cyclohexane; 1,1-di-(t-amylperoxy)cyclohexane); 1,1-di-(t-butylperoxy)-3,3,5-trimethyl-cyclohexane; OO-t-amyl-O-(2-ethylbexyl monoperoxy-carbonate); OO-t-butyl O-isopropyl monoperoxy-

carbonate; OO-t-butyl-O-(2-ethylhexyl)monoperoxy-carbonate; butyl-4,4-di(t-butylperoxy)valerate; Ethyl 3,3-Di-(t-butylperoxy)butyrate; and mixtures thereof.

9. (Original) The process of Claim 8 wherein the grafting initiator is 1,1-di-(t-butylperoxy)cyclohexane.

10. (Cancelled) The process of Claim 1 wherein the non-grafting initiator is selected from the group consisting of 2,2'-azobis(isobutyronitrile), 2,2'-azobis(2-methylbutyronitrile), lauroyl peroxide, decanoyl peroxide, and mixtures thereof.

11. (Cancelled) The process of Claim 10 wherein the non-grafting initiator is 2,2'-azobis(isobutyronitrile).

12. (Original) The process of Claim 1 wherein the high impact polystyrene is prepared using an upflow reactor.

13. (Original) The process of Claim 12 wherein the process is a continuous process.

14. (Original) The process of Claim 1 wherein the temperatures range for the polymerization is from about 100°C to about 230°C.

15. (Original) The process of Claim 14 wherein the temperatures range for the polymerization is from about 110°C to about 180°C.

16. (Original) The process of Claim 1 wherein the grafting initiator is present in an amount of from about 50 to about 1000 parts per million and the non-grafting initiator is present in an amount of from about 100 to about 600 parts per million.

17. (Original) The process of Claim 16 wherein the grafting initiator is present in an amount of from about 100 to about 600 parts per million and the non-grafting initiator is present in an amount of from about 100 to about 500 parts per million.

18. (Original) The process of Claim 1 wherein the grafting and non-grafting initiators are present in a ratio of grafting to non-grafting initiator of from about 1:10 to about 10:1.

19. (Original) The process of Claim 18 wherein the ratio of grafting to non-grafting initiator is from about 1:3 to about 3:1.

20. (Original) The process of Claim 19 wherein the weight ratio of styrene to rubber is from about 99:1 to about 7:1.

21. (Original) The process of Claim 1 wherein the admixture includes an additive.

22. (Original) The process of Claim 21 wherein the additive is selected from the group consisting of chain transfer agents, talc, anti-oxidants, UV stabilizers, lubricants, mineral oil, plasticizers

23. (Original) The process of Claim 1 additionally comprising removing residual monomer or solvent from the product high impact polystyrene.

24. (Original) A high impact polystyrene prepared by the process of Claim 1.

25. (Previously Presented) A process for preparing a high impact polystyrene comprising:

admixing a rubber and styrene monomer in the presence of at least two polymerization initiators selected to optimize a high impact polystyrene morphology,

wherein at least one of the at least two polymerization initiators is a grafting initiator and at least one of the at least two polymerization initiators is a non-grafting initiator; and

polymerizing the styrene to form the high impact polystyrene.

26. (Previously Presented) The process of claim 25, wherein the high impact polystyrene morphology comprises honeycomb structures.

27. (New) A process for preparing a high impact polystyrene comprising admixing a rubber and styrene monomer in the presence of at least two polymerization initiators and polymerizing the styrene wherein at least one of the at least two polymerization initiators is a grafting initiator and at least one of the at least two polymerization initiators is a non-grafting initiator selected from the group consisting of 2,2'-azobis(isobutyronitrile), 2,2'-azobis(2-methylbutyronitrile), lauroyl peroxide, decanoyl peroxide, and mixtures thereof.

Appendix C

Evidence

Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int. 1990)

Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986)

Appendix D

Related Proceedings Appendix

Not Applicable